

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

Eastern Gamagrass for Forage, Soil Improvement, and Buffer Strips

Introduction

Eastern gamagrass (*Tripsacum dactyloides* (L) L.) is a warm-season species native to the United States. This high-quality forage crop was widely used by early settlers until overgrazing and conversion of native stands into corn production fields reduced its acreage.

Eastern gamagrass has many characteristics that make it favorable for reintroduction as a forage crop, for use in conservation management systems, for improving soil quality and for providing grazing during hot summer months when cool season grasses are dormant.

Challenges of utilizing the perennial in modern agriculture include difficulty in getting the stand established and poor seed production. It may take several years before an adequate stand is established. Seed stratification (wet-chilling the seed prior to planting) and plant breeding programs are addressing these issues. However, the benefits of the perennial make it worthwhile to conduct further research on its use.

Research Background

Scientists at the Beltsville Agricultural Research Center, the University of Maryland, NRCS and the Maryland Extension Service were awarded a grant through the Fund for Rural America program to conduct the following research:

- Determine the yield, quality and nutrient composition of the forage and show if it can be used profitably in a rotational grazing system (beef/dairy).
- Demonstrate its adaptability for growth on marginal soils in the MidAtlantic area.
- Evaluate the use of eastern gamagrass as a buffer strip along streams and at the edges of cultivated fields.

Forage Benefits of Eastern Gamagrass:

- High palatability
- High digestibility
- High protein content (can contain as much as 17% protein)
- Long lived (70 years)
- High yields
- Provides grazing during hot summer months when cool season grasses are dormant.

Improving Soil Quality with Eastern Gamagrass

- Roots survive Al toxicity found in sub-surface layers of soil with pH below 5.0
- Roots can penetrate compacted acid soil layers
- Extensive aerenchyma tissue allows roots to survive in wet and/or waterlogged soils
- Roots can grow in and below the water table
- Roots can grow through compact clay pans

These traits may help to improve rooting conditions for subsequent crops by creating large pores for other roots to utilize.

Establishment of a perennial cover on problem soils also reduces soil erosion, adds organic matter, and provides a forage crop.

Buffer Strip Use of Eastern Gamagrass

- Recent studies have shown eastern gamagrass is effective as a filter to slow runoff and reduce soil loss caused by erosion in agricultural fields.
- Its ability to grow in marginal and wet soils makes it potentially valuable for buffer strips on non-productive areas.
- It has already been labelled an accepted grass for use under the NRCS Interim Conservation Standard: Stiff Grass Hedges for Erosion Control.



Interesting Tidbits

Source: Agricultural Research, April 1994, "Corn's Comeback Cousin," p. 12-15.

- Eastern gamagrass is a cousin to corn.
- It grows up to 8 feet tall, in bunches.
- Provides excellent cover for wildlife.
- The grain has a slightly nutty flavor, with 30 percent protein content.
- As a forage its protein content is similar to alfalfa.
- Harvestable seed yields are from 100-250 pounds per acre.
- Challenges of establishing a stand do occur and are met with a seed stratification program that includes a wet-cool storage treatment for 6-8 weeks.

Project in Action

During 1998 field research plots and on-farm plantings are being established. Plots have been planted on the Beltsville Agricultural Research Center farm in Beltsville, MD on restrictive soils, in Western Maryland on a beef farm and a dairy farm, and at the Wye Research Center on the Eastern Shore of MD. Greenhouse experiments are already underway using acid and compact soils.

Future Activities

Field days will be conducted at the research sites for interested parties to see the benefits of eastern gamagrass first hand.

Project findings will be disseminated via hard copy technical material, agency communications, posters at technical conferences, and training programs.

Keep an Eye Out

Watch for future technical updates on this project!

This is published by:
The Mid-Atlantic IRT
USDA-NRCS
1203 College Dr., Suite 101
Dover DE 19904
302-678-4178

Project Participants

Initial contacts concerning the project may be directed to the following persons, however the list of participants is much longer:

1. USDA-ARS

Donald Krizek, Plant Physiologist
Climate Stress Lab, USDA-ARS-NRI
Bldg. 046A, BARC-West
Beltsville, MD 20705-2350
301-504-5324/6526
email: dkrizek@asrr.arsusda.gov

2. USDA-NRCS

Janet Sioma, Ecological Agronomist
Mid-Atlantic IRT, USDA-NRCS
1203 College Dr., Suite 101
Dover, DE 19904
302-678-4178
email: jls@de.nrcs.usda.gov

Noel Soto, Grazing Lands Specialist
Mid-Atlantic IRT, USDA-NRCS
1 Credit Union Place, Suite 340
Harrisburg, PA 17110-2993
717-237-2233
email: nsoto@pa.nrcs.usda.gov

3. Univ. of MD/Coop. Extension

Jim Hanson, Assistant Director
Maryland Cooperative Extension (MCE)
1202 Symons Hall
Univ. of MD
College Park, MD 20742-5565
301-405-7992
email: jhanson@arec.umd.edu

Les Vough, Forage Crops Extension Specialist
Dept. of Nat'l Res. Sciences & Landscape
Architecture
H.J. Patterson Hall, UMCP
College Park, MD 20742
301-405-1322
email: lv14@umail.umd.edu

Please note: The information stated on page one is summarized from the grant proposal submitted by Dr. Donald T. Krizek, USDA-ARS. A list of references may be obtained by contacting one of the project participants.